

# Waves

- Definitions:

- Waves → oscillations that carry energy
- Medium → matter through which a wave moves

↙ move back and forth

- Wave Subsets:

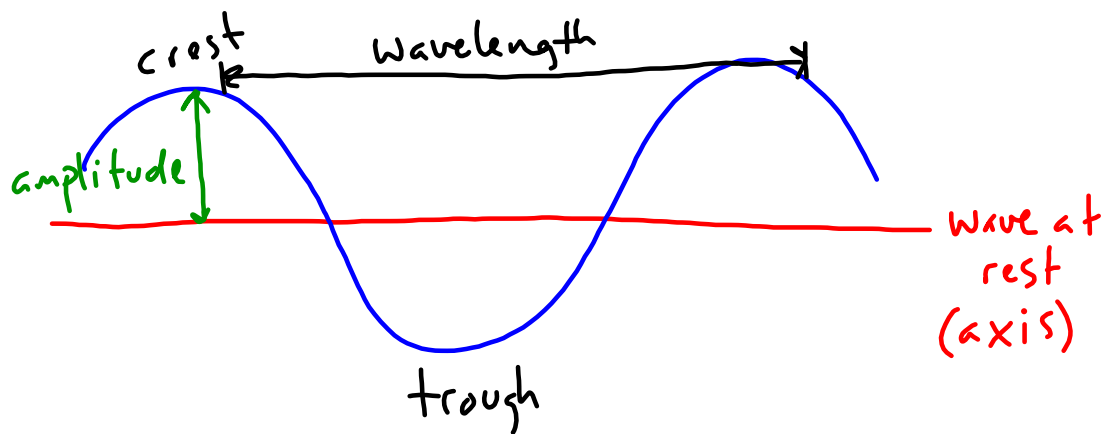
1. Mechanical → waves that require a medium to travel (sound, water)
2. Electromagnetic → does NOT require a medium to travel

- More Information:

- Most waves are caused by vibrating particles
- Energy is transported, but the particles only move in a small area.
- Waves are classified according to the direction in which the particles in the wave move
  - Transverse
  - Longitudinal

## • Transverse Waves:

- Particle motion is perpendicular to direction of wave motion (direction of energy transfer)
- Examples: Water waves, electromagnetic waves, earthquake s-waves

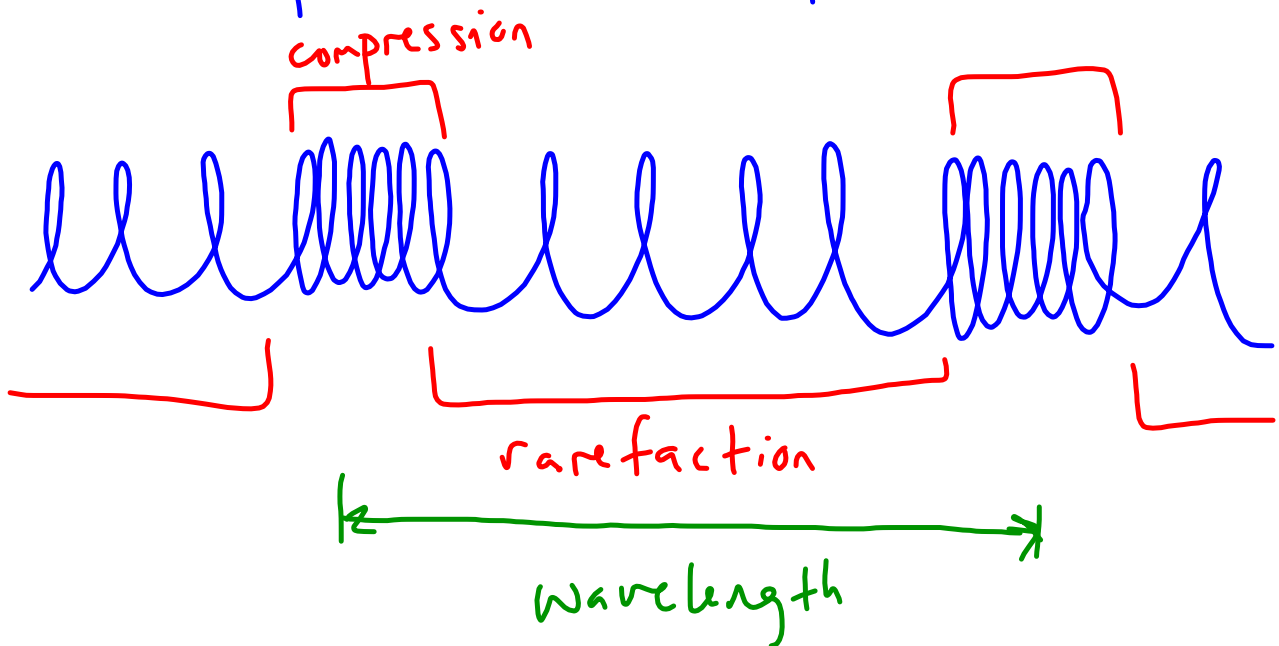


- Wavelength  $\rightarrow$  length of 1 full cycle
- Amplitude  $\rightarrow$  length from axis to crest or trough
- Crest  $\rightarrow$  highest part of a wave
- Trough  $\rightarrow$  lowest point of a wave
- Resting State  $\rightarrow$  the very middle, as if there were no wave

- Longitudinal Waves:

- Particle motion is in the same direction as wave motion

- Examples: earthquake p-waves, sound



- Compression → area where medium is pushed together

- Rarefaction → area where medium is further apart